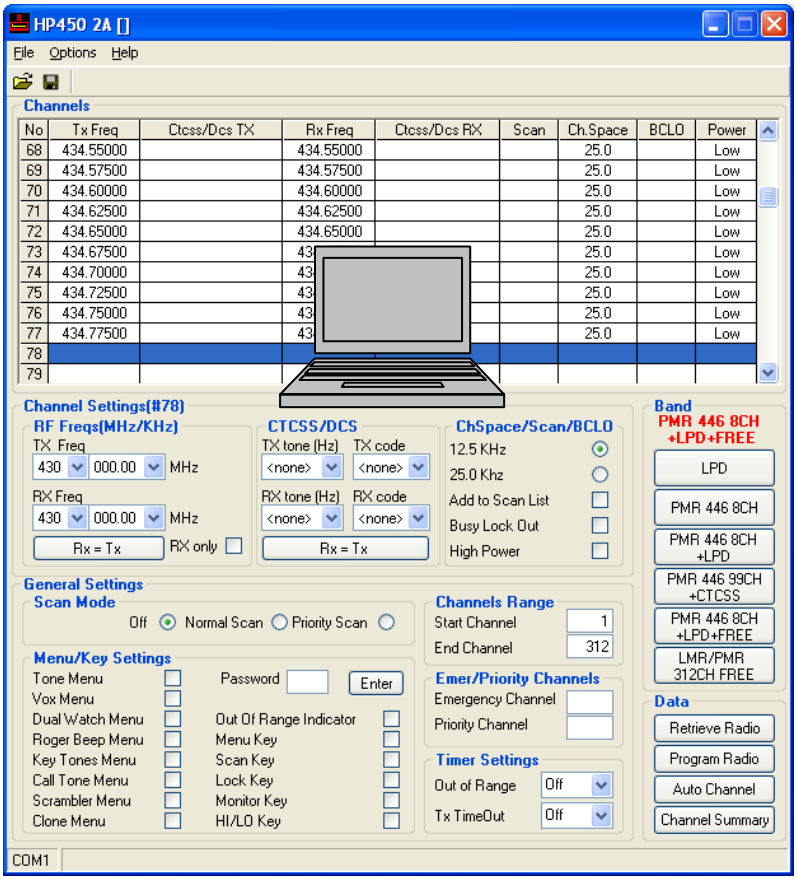
ALAN HP450 2A
UHF Handheld Transceiver



HP450 2A PC Programming Software Guide

Version 3.1 R1 issued on March 2008

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1 PROGRAMMING CAPABILITY

Welcome to the HP450! It's a programming software specifically designed for Alan HP450 2A and must be used in conjunction with the dedicated cable supplied with the programming kit.

1.1 What the software can do

The programming software allows you to extend the flexibility and features of your radio. Here are the main ones:

- You can choose among several operating band(s) – PMR (all PMR 446 channels), LPD (all LPD channels), PMR+LPD (all PMR446 channels and all LPD channels), PMR 446+CTCSS (all PMR 446 channels with CTCSS variations), PMR 446+LPD+FREE (all PMR446 channels, all LPD and 235 free channels) and LMR/PMR 312CH FREE (312 free defined channels - commercial band).
- You can enable the channel scanning facility (either in normal and priority mode) and you can define one of the available channels as priority channel for the priority scanning mode.
- You can also extend the TX output power (HI/LO power feature) and enable the Out of Range facility.
- The radio can be set even for non expert users, e.g. by adding/setting the timeout timer and the Busy Lockout feature (BCLO).
- If necessary, you can make the use of the radio very basic and simple by disabling some of the default menus/features: VOX, Dual Watch, Keypad lock and Monitor key.
- You can read the radio's programming by retrieve the related data from the radio to the PC or, vice versa, you can program a new data from the PC to the radio.
- You can save the programming data in your PC in order to create a programming library which can be open, edited and re-used for other radios.

If you choose one of the bands PMR, LPD, PMR+LPD or PMR 446+CTCSS, the TX/RX frequencies and bandwidth of the channels are automatically set according to the PMR and/or LPD regulations. Moreover, if you choose PMR 446+LPD+FREE or LMR/PMR 312CH FREE band:

- You can setup and store in the transceiver a database containing a list of up to 9840 fixed radio frequencies.
- You can choose the said 9840 radio frequencies and make them directly available to the end user in the channel position you want: channel 1, 2, 3, 4, etc. This can be done up to the channel 312(for PMR 446+LPD+FREE band first 8+69 channels are locked)!
- The bandwidth of each frequency can be also independently set in order to be suitable for 12.5 or 25 KHz channel steps.
- The CTCSS/DCS facility can be also independently set in TX and RX in each of the 312 operating channels.
- You can insert each of the available channels in the scan list in order to make it scanned or not when the scanning facility is used. Moreover, you can define one of the channels as priority channel for the priority scanning mode.
- You can also define one of the available channels as Emergency channel (quickly recalled by the Emergency button).

… And much more!

Every parameter/feature must be programmed according to the local regulations and directives. Doing that without respecting them is at your total risk and responsibility.

1.2 What the software can't do

Every radio and software has its own limits. In this case, for example:

If you set the LMR/PMR band or PMR 446+LPD+FREE band, you can't:

- change the channel-position labels or the order in which they appear to the end user – he/she always see on the LCD: 1, 2, 3… up to the channel 312.
- set and manage more than 9840 radio frequencies. All the channels you make available for the end user are always built by picking one of the said 9840 frequencies from the database. However, you can independently set on every channel a different CTCSS tone or DCS code or make each channel inserted or not in the scan list.

If decide to set the LPD band or the PMR+LPD bands and the software will automatically set up for you the 8 (PMR446) channels + the 69 (LPD) ones allowing many different radio frequencies, but in this case you can't:

- program channels which the frequency/bandwidth is not included in the PMR446/LPD frequency plans. When you set the said bands, the channel programming is disabled and the radio can work exclusively in the channels/bandwidth/frequencies complying with PMR446/LPD regulations. This means that you can't have, for example, duplex channels.
- program different CTCSS/DCS or BCLO. However you can later do some of these operations manually by using the radio's keypad.

In any case, if you need to work on PMR446 or LPD frequencies with different bandwidth or in duplex mode, you can set the LMR/PMR band and program PMR446 or LPD channels with different parameters (e.g. different TX or RX frequency or different bandwidth).

2 ABOUT THIS MANUAL

2.1 Warning notes

IMPORTANT! Before going on, please have a look to the following notes.

Every effort has been made to ensure that the information in this document is complete, accurate, and up-to-date. CTE International assumes no responsibility for the results of errors beyond its control. The manufacturer of this equipment also cannot guarantee that changes in software and equipment made by non authorized people and referred to in this guide will not affect the applicability of the information in it.

Only authorized and qualified technicians should be allowed to follow the operation described into this manual.

This manual has been written for use by CTE International dealers and distributors who are programming the ALAN HP450 2A handheld transceivers for customers. You should be familiar with conventional radio systems, radio system and radio network settings parameters as well as general PC operations.

Channel parameters must be programmed according to your local regulations and directives. Doing that outside them is at your total risk and responsibility.

This programming guide is subject to change without notification. This booklet is referred to the current software version *3.1 R1*. If you own a later one please surf on www.cte.it or contact CTE International for the most recent updates by sending an email at **webmaster@cte.it**.

Please read the whole manual before starting any operation. Chapters and paragraphs must be read in the order they are written. Crosse references are only made to increase its usability.

2.2 Conventions and Symbols in this Book

2.2.a Notes and warnings

This symbol marks a 'note'. Notes are hints or tips which offer additional information to help you.

This symbol marks a 'warning'. Warnings are special notices which you should read and follow carefully to avoid possible damage to your equipment, potential danger to yourself or others. It also highlight some information which are not dangerous, but can involve big problems in the operations.

2.2.b Font formatting

Window names, screen buttons and key names will be highlighted in **bold**

Some sentences and words of particular importance are underlined

LCD messages which may appear on the transceiver's display are highlighted in `Courier New`

Cross references to paragraphs, chapters, page, figures, etc. are marked with the ⚐ (flag) symbol. E.g.: "⚐ 3.1" means: "See the paragraph 3.1"

2.2.c Screenshots and operations

Screenshots and operations might be slightly different according to the operating system in use.

2.2.d Others

All the PC operations described/shown in this manual are meant made with Windows XP.

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3 SET UP

3.1 Unpacking

The following items are in the programmer's package:

(a) CD ROM containing the programming software
(b) Programming operating instructions (this book!)
(c) Connection cable/adapter (USB to transceiver's programming port)

If something is missing, please promptly inform your supplier.

3.2 System requirements

To use the CTE Programming Software for Alan HP450 2A you need the following hardware and software:

(a) Personal computer with Pentium (I) processor or higher (basically depending on the operating system)
(b) Operating system Windows® 2000 or higher.
(c) Hard drive at least 20 MB of free disk space
(d) Random access memory (RAM) - basically depending on the O.S. (at least 32 MB; 64 MB recommended)
(e) A free USB port
(f) A free virtual COM port from COM 1 to COM 16

3.3 Before Installing the Software (International Settings)

IMPORTANT! Be sure that the international settings of your PC are properly set up as follows. They are different depending on your operating system.

If you don't set the international settings as follows, the programming software will release errors when you set the main R.F. frequencies and other parameters.

When you completed the programming, don't forget to restore your usual settings in the normal operation of your PC, otherwise some programs may not work properly.

3.3.a Windows XP

1) Click the **Start** button and select **Control Panel**.
2) Double click the **International and language settings** Icon. The **International options and language** window will open.
3) Ensure that the **International options** tab is selected.
4) Use the drop down button to select **English (United States)** between the various languages.
5) Click **OK** to confirm the settings.

3.3.b Other operating systems

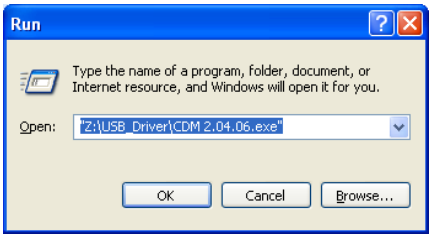
Perform the over stated operation according to the commands available in your operating system / control panel.

3.4 Installing the USB drivers

All the USB devices need to install their driver before being able to work properly (a driver is a dedicated small piece of software interfacing the operating system with the device). So, before doing the following operations for the first time, you must install the HP450 2A USB driver firstly.

It is important that the USB Driver must be installed first - before plug USB connector of the programming cable to the PC and before installing the PC Programmer.

1) Insert the CD disk in the CD drive of your PC.
2) Click the **Start** button, and then click **Run**: you will see the **Run** dialog box.
3) Type **"Z:\USB_Driver\CDM 2.04.06.exe"** (where **Z:** indicates your CD drive) or click the **Browse…** button and use the **Browse** commands in order to select the said path and the executable (**.exe**) file.



4) Click **OK** and then follow the instructions which appear.
5) The USB Driver will be installed automatically.

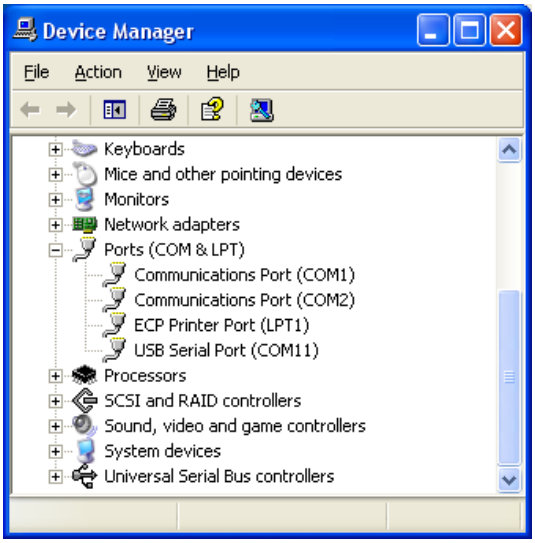
*If **Z** is not the drive letter of the CD driver of your PC, please change the letter accordingly in the over stated path.*

*If Windows XP is configured to warn when unsigned drivers are about to be installed, a warning screen may appear. Click on **Continue Anyway** to continue with the installation.*

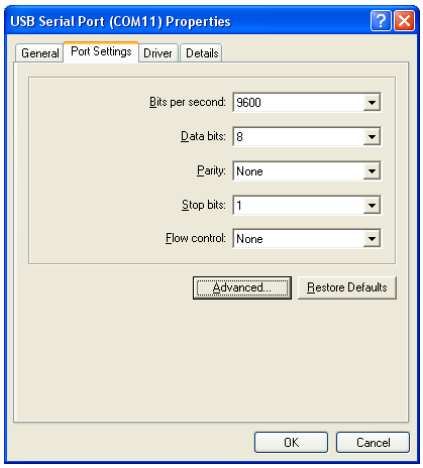
3.5 Checking/changing the COM port in the driver

You must check if the number of the virtual COM port automatically created by the driver in the par. 3.4 is 16 or less. Otherwise the programming software can't communicate with it.

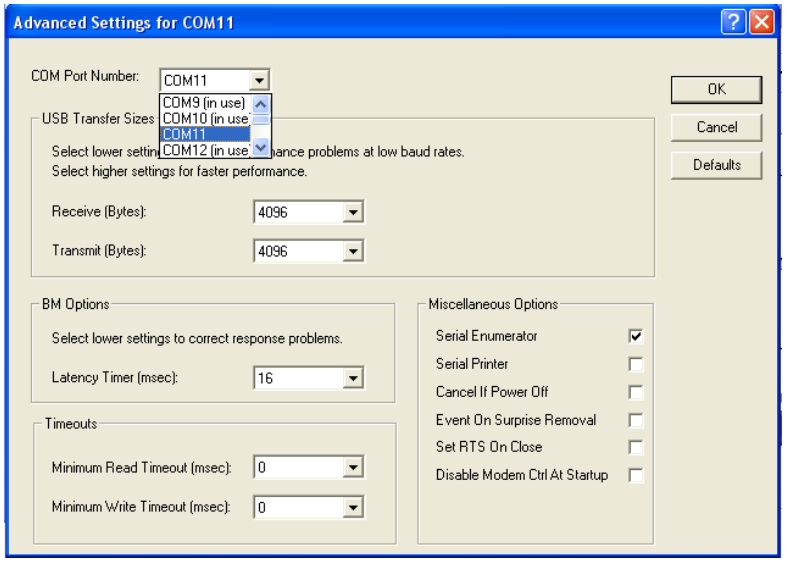
6) Unplug the USB connector of the programming cable from the PC.
7) Press **Start** – **Control Panel**, and then double click the **System** icon. The **System** window will open.
8) Click the **Hardware** tab, and then press the **Device Manager** button. The **Device Manager** window will open.



9) Click the small box on the left of **Ports (COM & LPT)** in order to show all the ports in use.
10) Plug the USB connector of the programming cable to the PC. After one second you will se the **USB Serial Port** appearing and its COM port (in the over stated example **COM 11**).
11) If the COM port number is from **1 to 16**, just exit and go to step par 3.6. If not, go on with the next steps.
12) Right click on the **USB Serial Port** and select **Properties**. The **Properties** window will open.



13) Click the **Port Settings** tab, and then click the **Advanced** button. The **Advanced Settings** window will open.



14) Using the **COM Port Number:** drop down button to change the COM port number with another one having number 1 to 16 and not in use. You will see which COM ports are in use just after their number with the caption **(in use)**, in the over stated screenshot **COM9** is in use, so you can't select it.

15) Click **OK** many times in order to save end exit.

16) Note the **COM** number currently used by the USB serial Port (you will need it in the next paragraphs).

Don't select ports already in use. You risk a port conflict with improper operations in your PC.

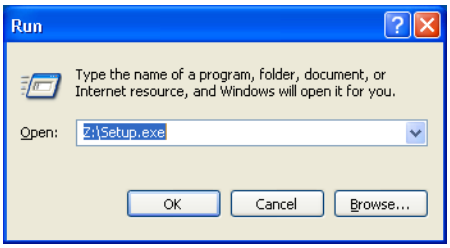
3.6 Installing the programming software

To install the programming software, just please follow these steps.

Steps can be slightly different according to the O.S. you are using and its version (e.g. service packs, etc.).

Before installing the software, ensure to have properly read the over stated paragraph "Before Installing the software" and strictly follow its directions, otherwise the software could not run properly.

1) Click the **Start** button, and then click **Run**: you will see the **Run** dialog box.
2) Type **Z:\setup.exe** (where **Z:** indicates your CD drive) or click the **Browse…** button and use the **Browse** commands in order to select the said path and the executable (**.exe**) file.



3) Click **OK** and then follow the instructions which appear.
4) Several windows will ask you to insert your user's information, choose a destination location for the program and finally select the program folder. To accept the default information and go ahead with the next window click **NEXT>** button.

5) When installation is complete, the **HM450** programmer's icon appears in **Start** – **Programs** – **HM450** folder
6) To run the PC Program just double-click on the **HM450** icon. Or you can make a shortcut and paste it in your desktop for easier access for later use.

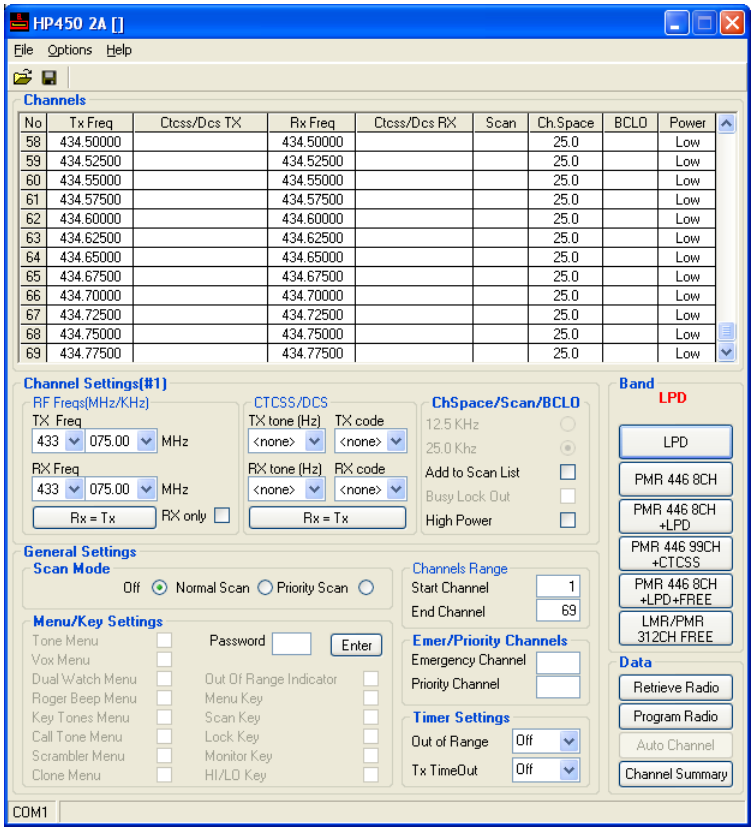
The software is now ready to be used. Now you just have to open the software and set the COM port as below stated.

4 PRELIMINARY OPERATIONS

4.1 Running the programmer software

Click the **Start** button, point to **Programs** – **HM450** folders and then click **HM450** icon

After few seconds the following window will appear:



- The **HP450** window – it contains the **Channels table** and **General** and **Channel settings panels** – they contains the setup of each channel in terms of TX/RX frequency, CTCSS or DCS, channel space, BCLO, scanning, power and panels for those settings, the settings of the various features, such as enabling/disabling menus, HI/LO power enable, etc..

Those windows will be described in detail later.

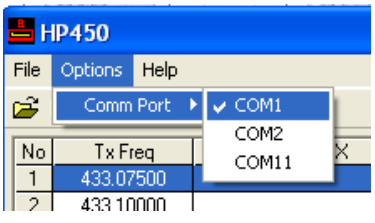
4.2 Setting the COM port in the programming software

Now that the programming software has been installed and opened for the first time, the proper COM port (serial port) must be set in it. This will allow the data exchange between the PC and the software.

The serial port COM1 is automatically preset as default port.

Setting the proper COM port (serial port) after installing the s/w is not mandatory, because application scan for presence of radio in programming mode in available serial ports in range 1..16.

1) From the menu **Options** select **Com Port**: you will see the tick sign on **Com 1**.



2) Select **Com 11** or selected in par 3.4: the tick will be moved on **Com 11** and this port will be switched as default.

If the COM port you have set doesn't work, check the documentation of your PC and try by setting another port.

4.3 Checking the software version

Please check the software version you are using, in order to make sure that this manual is referred to the proper one (or check if a new version has been released in the meantime). The software version will show from menu **Help-> About**. The **About** window will open showing you the said data.

If the software version you are using doesn't match with this manual, please contact CTE International for the last upgrade as stated in "Warning notes".

4.4 How to obtain help

This file will open in Acrobat Reader when you press F1 key or enable from menu **Help-> Contents**. This will open programming manual.

5 PROGRAMMING PATHS

This section briefly explains which operation paths you have to follow according to the kind of operation you intend to do.

Read all this chapter completely and carefully, otherwise you risk to perform the wrong procedure.

5.1 New or already stored data?

Now that you have properly run the software, and connected the programming cable to your PC, you can choose one of the following procedures depending if you want to create a completely new programming data set or you need to use a previously one stored in your PC or in a radio:

- ⇨ If you need to create a completely new programming data set (because it's the first time you are using this software and/or you haven't previously stored same/similar programming data neither in your PC nor in a radio), go directly to Chapter 6.
- ⇨ If you want to use (and eventually edit) data sets previously stored in your PC, because they contains data which are the same or similar to the one you need, go to the following paragraph 5.2.
- ⇨ If you want to use (and eventually edit) a data set previously stored in a radio, because it contains data which are the same or similar to the one you need, go to the par. 5.3.

5.2 Editing a data set from the PC

If in your PC was stored a data set which already includes the programming data you need to transfer to one or more radios, or it's very close to the one you need, follow these steps:

1) Open the data file stored in your PC as stated on par. 7.4.
2) If necessary, edit the data as stated on chapter 6 (in this case, it's recommended to save the new data set in the PC as stated on par. 7.4.c).
3) Connect the radio to be programmed to your PC as stated on par. 7.1
4) Transfer the data to the radio as stated par. 7.2.
5) If necessary, repeat the last two steps on other radios to be programmed.

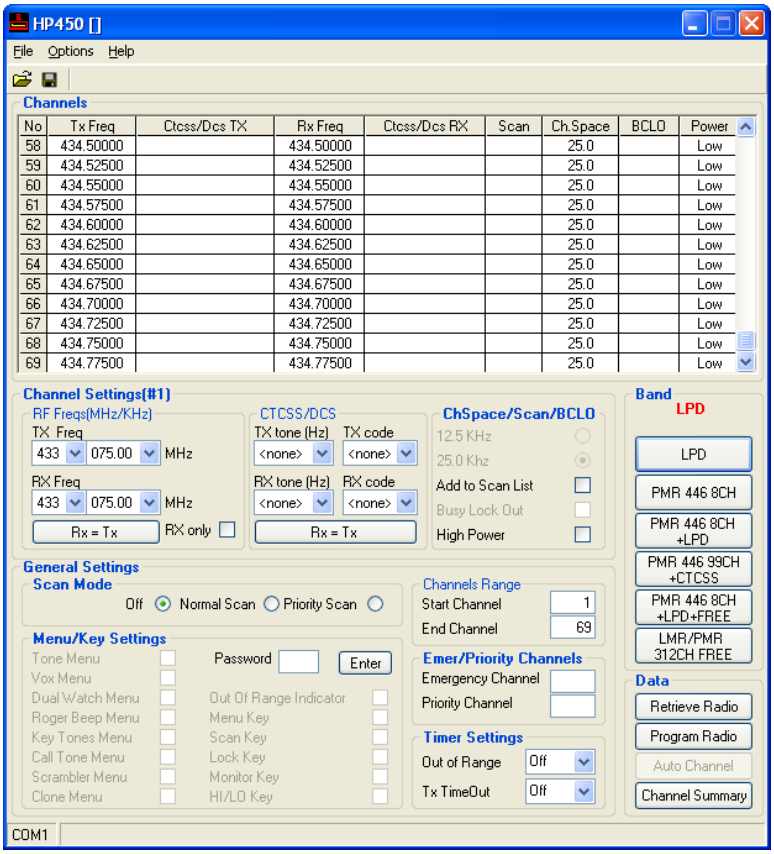
5.3 Editing a data set stored in a radio

If a radio contains the programming data you need to transfer to one or more radios (cloning), or it is very close to the one you need, follow these steps:

1) Connect the radio which contains the programming to the PC as stated on par. 7.1
2) Retrieve the data from the radio to your software as stated on par. 7.3.
3) If necessary, edit the data as stated on chapter 6 (in this case, it's recommended to save the new data set as stated on par. 7.4.c).
4) Connect the radio to be programmed to the PC as stated on par. 7.1
5) Transfer the data to the radio as stated par. 7.2.
6) If necessary, repeat the last two steps on other radios to be programmed.

6 EDITING PARAMETERS

This section shows how to setup the radio frequencies, features and channels. Please follow these instructions in their exact order.



6.1 Data safety

If you are going to edit a large amount of data, it's recommended to create now a new data set and store it on your PC. This will avoid to waste time in editing again all the data from the beginning in case of software/PC failure. In this case you will just restore the data from the PC by opening the related file(s). For further details in creating new data files ⚐ 7.4.c.

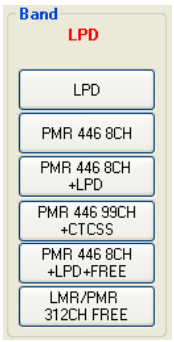
6.2 Setting the band

1) First of all you have to set the needed band(s) according to the customer's requirements. To decide which one is the best for your specific application, have a look to the following table showing the main programming differences:

BAND	Operating frequency range (MHz)	PARAMETERS YOU CAN SET...					Remarks
		Frequencies	Channels	CTCSS/DCS	Duplex Ch.	Bandwidth	
LPD	433.075 - 434.775	No*	69*	No**	No***	No****	The radio is automatically preset with the 69 channels of the LPD regulation
PMR 446 8CH	446.00625 - 446.09375	No*	8*	No**	No***	No****	The radio is automatically preset with the 8 channels of the PMR446 regulation (radio's default programming)
PMR 446 8CH + LPD	Both the PMR and the LPD frequency ranges	No*	8+69*	No**	No***	No****	The radio is automatically preset with both the PMR446 and the LPD channels (8+69 channels). It allows the maximum number of radio frequencies and it's the best to allow the maximum compatibility with other PMR446 and/or LPD radios.
PMR 446 99CH + CTCSS	PMR frequency ranges and CTCSS combination	No*	99*	No**	No***	No***	The radio is automatically preset with the 8 channels of the PMR446 regulation with various CTCSS combination
PMR 446 8CH + LPD + 235 FREE	Both the PMR and the LPD frequency ranges. For free 235 channels range is 430.000 - 470.99375	No* Yes for 235 free channels	8*+69*+ 235 free channels	Yes for free channels	Yes for free channels	Yes for free channels	The radio is automatically preset with both the PMR446 and the LPD channels (8+69 channels) and 235 user free defined channels.
PMR/LMR 312CH FREE	430.000 - 470.99375	Yes	312 free channels	Yes	Yes	Yes	Full flexibility within the entire commercial PMR/LMR band.

* Frequencies and channels are automatically set according to the PMR446 and/or LPD regulation
** The CTCSS/DCS can be further manually activated or set by means of the radio's keypad
*** Duplex is not allowed in the PMR446 and/or LPD regulation, so each channel is automatically set with the same TX/RX frequency
**** Channel bandwidth is automatically set to 12.5 KHz for PMR446 and 25 KHz for LPD according to the related regulation

2) Select one of the bands in the **Band** area.



For further information about band settings and related features ⇗ Chap. 0.

*If you didn't select **LMR/PMR 312CH FREE** band or **PMR 44CH+LPD+FREE** band, some of parameters will be unavailable: **Frequency, CTCSS/DCS** and **Channel Spacing/Scan/BCLO** areas will be disabled. This is normal, because the frequencies, channel spacing and etc. of the PMR446 and/or LPD bands will be automatically set by the software according to the related regulations.*

*If you selected the **LMR/PMR 312CH FREE** band or **PMR 44CH+LPD+FREE** band, you can set the all disabled parameters.*

6.3 Setting/editing the radio channels

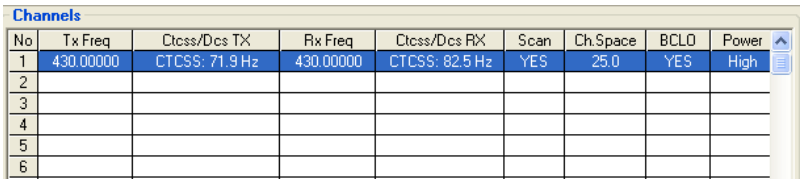
These settings are available only if on par. 6.2 you have selected the LMR/PMR 312CH FREE band or PMR 44CH+LPD+FREE band.

Now that you have defined the database of TX/RX frequencies, you can set each radio channel available to the end user by means of the **MENU** + ▲ o ▼ keys. You can set the following parameters:

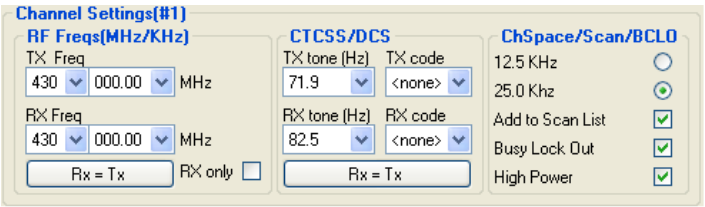
- TX/RX frequency – picking up one of the available frequencies preset (⇗ par. 6.3a)
- CTCSS tone or DCS code to be used in TX/ RX (⇗ par. 6.3b)
- Select the channel bandwidth (either **25** or **12.5** KHz) (⇗ par. 6.3c)
- Inserting the channel in the scan list or not (⇗ par. 6.3c)
- Set BCLO for each channel(⇗ par. 6.3c)
- Set High Power for each channel(⇗ par. 6.3c)

You can set up to 312 channels combining the different TX/RX frequencies, different CTCSS/DCS in TX or RX, insert them or not in the scan list and etc.

1) In the **Channels** window, click the row of the table related to the first channel (*blue band select current channel and selected channel number appear after **Channel settings** area title - e.g. **#1**)* you intend to set (e.g. **No1**).



2) The **Channel Settings** area will always show current channel settings.



3) In the **RF Freqs** area, use the **TX Freq** drop down selectors to set one of the predefined radio frequencies set as the TX frequency for the selected channel (⇗ par. 6.3a).

4) In the **RF Freqs** area, use the **RX Freq** drop down selector to set one of the eight radio frequencies set as the RX frequency for the selected channel (⇗ par. 6.3a).

5) Use the drop down selectors of the **CTCSS/DCS** area to set the CTCSS/DCS in TX. (⇗ par. 6.3b).

6) Choose from **ChSpace/Scan/BCLO** area: channel bandwidth (either **25** or **12.5** KHz), insert the channel in the scan list or not, set BCLO for each channel, set High Power for each channel. (⇗ par. 6.3c).

7) Now:
   - If you need to set the next channel, click the on next row in channel table, then restart from step 2.
   - If you need to set another channel (not the next one), go to step 1.
8) When you have completed the programming of all the needed channels, go to the next paragraph.

You can program the channels even if they are not in sequence. For example, programming channel 1, skip channels 2 and 3, and programming the channels from 3 to 10. In this case the user will be able to select channels 1, 4, 5, 6, 7, 8, 9 and 10.

To skip a channel, just ensure to clear content.

*To clear channel content use right mouse button and choose **Clear content** from menu.*

*To clone channel content use right mouse button and choose **Clone channel** from menu.*

*If you don't need the CTCSS/DCS (in RX and/or in TX), set the selector to **none** accordingly.*

Since the DCS codes start with the reference number 39, they don't match with the one read on the radio's display (par. 8.2).

*If necessary, you can program a channel only in RX (TX will be disabled). In this case, select **RX only**.*

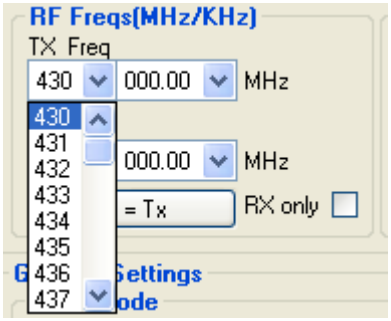
Scan feature won't work unless you enable it with the related command (par. 6.7).

*In the **Channel Spacing** area, select either 12.5K or 25.0K according to the bandwidth associated to the entered frequency.*

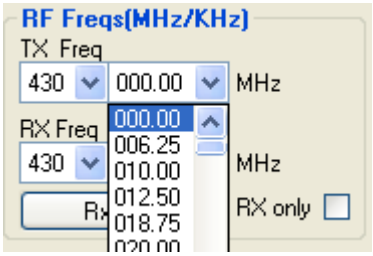
6.3.a Basic channel parameters: TX/RX frequency.

These settings are available only if on par. 6.2 you have selected the LMR/PMR 312CH FREE band or PMR 44CH+LPD+FREE band.

1) Go to the **Rf Freqs (MHz/KHz)** area and select the TX frequency in MHz in the upper box **TX** by clicking its left drop down button, then click the hundreds MHz you require (e.g. **430** for 430 MHz)



2) Select now the decimal TX frequency in KHz by clicking the right drop down button, then point the decimal frequency you need (e.g. **000,00** will select 430,000.00 MHz)



*As soon as you have clicked the right drop down button, you can quickly program to the hundred KHz you need by pressing the related number buttons in your PC's keyboard. E.g. to quickly program **800,00** KHz, just type the keys **8 0 0** in your PC's keyboard, then press the **Enter** key in order to set the said decimal frequency.*

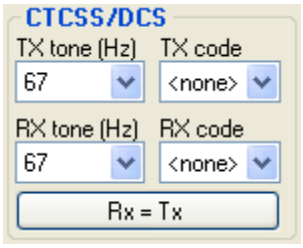
3) Now that you have selected the whole TX frequency, you have next choices:
   - ⇨ *If you are programming a simplex channel* (same RX and TX frequency), click the **Rx = Tx** button: The RX frequency will be immediately set to the just programmed TX one.
   - ⇨ *If you are programming a duplex channel* (RX frequency different than the TX one), go to **RX** box and set up the hundreds MHz and the decimal RX frequency performing the same operation described in steps 1) and 2)

6.3.b Basic channel parameters: CTCSS/DCS Tx/Rx Setup

These settings are available only if on par. 6.2 you have selected the LMR/PMR 312CH FREE band or PMR 44CH+LPD+FREE band.

As you may know CTCSS (continuous tone code squelch system) is a system which uses a sub audio frequency TX tone as an access "key" to work a repeater (encoder) or to unlock the party's sub audio tone sensitive squelch. On the other side you may want to receive only signals provided with a proper sub audio tone, in this case you'll select the decoder (tone squelch) features as well. DCS (Digital Coded Squelch) works in a similar way, but using a code instead of a fixed frequency.

1) Make sure you are programming the CTCSS/DCS in the right channel by checking the channel number in channel table.
2) If you need to activate the CTCSS *encoder* click on the **TX tone (Hz)** drop down button and select the tone encoding frequency you need (e.g. 67.0 Hz)



3) If you need to activate the CTCSS *decoder* as well, click on the **RX tone (Hz)** drop down button and select the tone decoding frequency you need (e.g. 67.0 Hz)

*If in you need to set up the same RX and TX tone frequency, just click on the **TX = Rx** button: the **RX tone** will be copied from the **TX tone***

4) If you need to activate the DCS codes repeat steps 2) and 3) in the DCS area with **TX code** and **RX code** drop down buttons.

6.3.c Basic channel parameters: Channel space, BCLO, Scan, Power

These settings are available only if on par. 6.2 you have selected the LMR/PMR 312CH FREE band or PMR 44CH+LPD+FREE band.

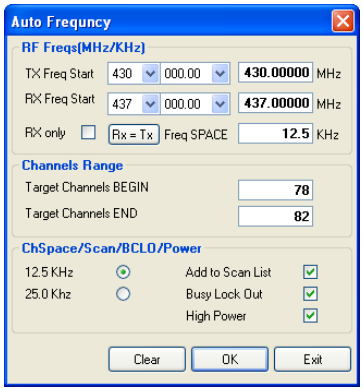
Go to the ChSpace/Scan/BCLO area and select:

1) Select the channel bandwidth (either **25** or **12.5** KHz) with option buttons **25 KHz** or **12.5 KHz**
2) Inserting the channel in the scan list or not by tick the **Add to Scan List** checkbox
3) Set BCLO for each channel by tick the **Busy Lock Out** checkbox
4) Set High Power for each channel by tick the **High Power** checkbox

6.3.d Fast channel setting: Auto channel

These settings are available only if on par. 6.2 you have selected the LMR/PMR 312CH FREE band or PMR 44CH+LPD+FREE band.

When you want to set channels faster you can use special function **AUTO CHANNEL.** This function set channels in selected range with predefined values for RX/TX Freqs, channel space and etc.



1) You can start Auto Channel window by click on button **Auto channel** in **General settings** area.

2) Select the **TX Freq Start** and **RX Freq Start** values. You will see selected values in boxes
3) Set value for **Freq Space** in KHz (*value must be divide on 6.25 or 10 without remainder*)
4) Set target channels **BEGIN** and **END** Number
5) Set desired values for channel spacing, BCLO, Scan and Power.
6) Press button **OK**
7) Channel range from **Target channel BEGIN** to **Target channel END** will be filled with desired parameters and you can see the result in channel table.
8) If you need to clear some range of channels just set values for fill **Target channel BEGIN** and **Target channel END** and press button **Clear**
9) All entered values will be remembered for the next usage.

6.4 Setting the available channel range

These settings are available only if on par. 6.2 you have selected the LMR/PMR 312CH FREE band or PMR 44CH+LPD+FREE band.

You have now to define the channel range available to the end user when he/she uses the keys **MENU** + ▲ o ▼. This is very useful because you can restrict the access to some channels without deleting the other ones.

1) In the **General Settings** window, locate the **Channels Range** area.
2) Click the **Start Channel** field and set it to the first channel number you want to make available (e.g. **1)**
3) Click the **End Channel** field and set it to the first channel number you want to make available (e.g. **12**).

In the over stated example, even if you have programmed channels from 1 to 20, only channels from 1 to 12 will be available to the end user by means of the keys **MENU** + ▲ o ▼.

You can allow the user accessing an additional channel by means of the Emergency button (☞ bottom note in the following paragraph).

6.5 Setting the Emergency channel

These settings are available only if on par. 6.2 you have selected the LMR/PMR 312CH FREE band

Every time the user presses the Emergency button (the orange one just over the **PTT**), he/she will recall a specific emergency channel which you can define now:

1) In the **General Settings** window, locate the **Emergency/Priority Channels** area.
2) Click the **Emergency Channel** field and type the number of the emergency channel (e.g. **3**).

*Should you need to disable the Emergency button, on step 2 type **0** instead.*

*The emergency channel could be any channel previously programmed on par6.3, even a channel not included in the range set on par.6.4. For example, if on par.6.3 you programmed channels from 1 to 20 and on par.6.4, you restricted the access from channels 1 to 12, you can set the Emergency channel on channel 15. As a result, the user will be able to access channels 1 to 12 by means of the **MENU** + ▲ o ▼ keys, and the channel 15 only by means of the Emergency button.*

You can't define as emergency channel any channel previously set only in RX on par.6.3. However, the emergency channel must be previously programmed both in TX and RX.

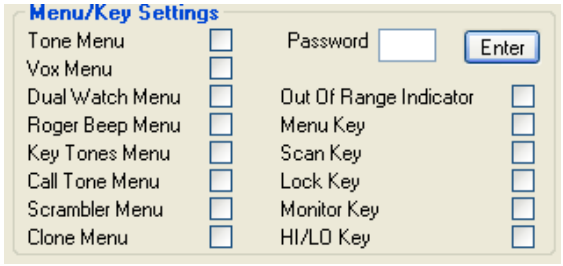
Don's set as emergency channel any channel not previously set on par 6.3. If you do so, an error message will appear in the download phase. In this case set another valid emergency channel.

6.6 Customizing the radio

6.6.a Enabling/disabling the basic features

You can disable/enable the following basic features:

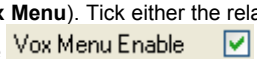
- **Tone Menu**
- **Vox Menu**
- **Dual Watch Menu**
- **Roger Beep Menu**
- **Key Tones Menu**
- **Call Tone Menu**
- **Scrambler Menu**
- **Clone Menu**
- **Out Of Range Indicator**
- **Menu Key**



- **Scan Key**
- **Lock key**
- **Monitor Key**
- **HI/LO Key**

All of them are disabled by default. For further details ⚐ user's manual. To disable/enable one of the over stated features:

1) In the **Menu/Key Settings** window, click the **Password** field.

2) Type the password **cte** (for security reasons, it will shown as three stars) and press **Enter**.
3) In the **Menu/Key Settings** area, locate the feature you want to disable/enable (e.g. **Vox Menu**). Tick either the related checkbox, to enable or disable the feature respectively (e.g. to enable/disable the **Vox Menu** feature, tick the 

check box button).

According to the settings you did, the Vox, Tone Dual Watch menus and etc. will appear or not in the menu, the Lock and Monitor keys will work or not.

Generally speaking, should you have to give the radio to non expert users which will use just the basic functions, it's recommended to disable all the functions and enable the Busy Lock Out(from channel settings area).

The **HI/LO** button of the radio is disabled by default and the TX output power is always 0.5 W. However, you can enable the said key and select with it two output powers:

- Low Power = 0.5 W
- High Power = 5 W

Should you enabled the HI power, warn the user to use it only when necessary. This will extend the battery duty and will reduce risks of interference.

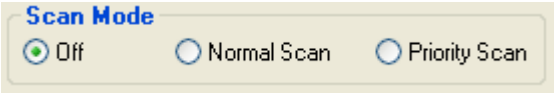
Raising the TX output power over 0.5 W might infringe your local regulations (e.g. the PMR446 ones). Doing that is at your total risks and responsibility.

This setting can't be saved together with the other ones. You always have to manually enable the HI/LO key and download this command to any radio you program.

6.7 Scan mode settings

6.7.a Enabling/disabling/setting the scan mode

Normally, the scan mode is disabled. So, even if on par. 6.3 you have inserted two or more channels in the scan list, pressing the radio's **SCAN/LOCK** button won't activate the scanning. To enable/disable/set the scan mode:



1) In the **General Settings** window, locate the **Scan Mode** area.
2) Tick one of these three radio buttons according to your needs:
   - **Off** – the **SCAN/LOCK** button will be disabled (scan mode not available even if you have inserted two or more channels in the scan list.
   - **Normal Scan** – the **SCAN/LOCK** button will activate the scanning through all the channels inserted in the scan list.
   - **Priority Scan** – ditto, but the **SCAN/LOCK** button will activate the scanning in priority mode (⚐ the user's manual)

*If on par. 6.2 you haven't previously set the band **LMR/PMR 312CH FREE** band or **PMR 44CH+LPD+FREE** , the scanning will be made on all the available channels: all the LPD channels (if set to **LPD Only**), all the PMR446 8CH channels and all the PMR446+LPD channels (if set to **PMR+LPD combinations**).*

Should you have ticked Normal Scan or Priority Scan, ensure to have previously inserted at least two channels in the scan list.

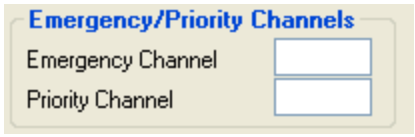
Should you have ticked Priority Scan, don't forget to set the priority channel as follows, otherwise an error message will be released in the download phase.

6.7.b Setting the priority channel

If in the over stated procedure you haven't ticked **Priority Scan**, you can skip this procedure. Otherwise you have to define the priority channel for the Priority scan mode.

As explained in the user's manual, the priority channel will be scanned through the channels inserted in the scan list (or through all the channels if on par. 6.2 you have previously set the one of the bands **LPD, PMR 446 8CH, PMR 446 8CH + LPD, PMR 446 99CH + CTCSS**). For example, if you inserted channels 3, 4 and 5 in the scan list and you set the channel 9 as Priority channel, the channels will be scanned in this order: 3 **9** 4 **9** 5 **9** 3 **9** … and so on. To set the priority channel:

1) In the **General Settings** window, locate the **Emergency/Priority Channels** area.



2) Click the **Priority Cannel** field and type the number of the priority channel (e.g. **3**).

*IMPORTANT! If on par. 6.2 You have previously set the band on **PMR+LPD combination**, the radio will scan all the PMR446 channels, then the LPD ones.*

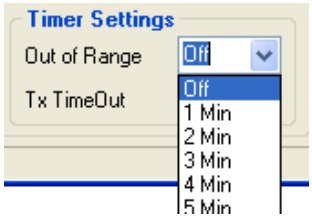
You can't define as priority channel anyone set only in RX on par. 6.3. The Priority channel must be previously programmed both in TX and RX.

Don's set as priority channel any channel not previously set on par6.3. If you do so, an error message will appear in the download phase. In this case set another valid Priority channel.

6.8 Out of range

This function should be enabled in two radios involved in a communications and allows the two users to know if the party is in his/her radio range. It works by automatically exchanging a specific code between the two radios in a certain interval. For further details ⚐ the user's manual. To enable the out of range feature:

1) In the **Timer Settings** window, locate the **Out of Range** drop down button.
2) Set the **Out of Range** drop down button to the needed interval of code exchange between the radios (from **1 Min.** to **5 Min.**).
3) Ensure that the party's radio is set with the same interval.



For normal use, it's recommended to set the interval to 1 Min. It will warn the users in shorter time in case of out of range.

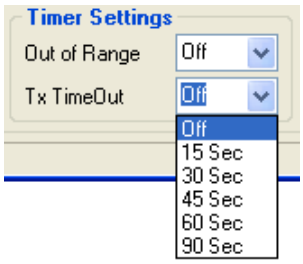
*To disable the Out of Range feature set the drop down selector to **Off**.*

6.9 TX timeout timer (TOT)

If your customer is not familiar with radio communications, we recommend to enable the Time Out Timer feature (⚐ user's manual) and set an appropriate time according to the customer's need. To do that, in the **Timer Settings** window, click the **Tx Time Out Timer** drop down selector and select a **Tx Time Out** time (from 15 to 90 seconds).

In the example we set the TOT to 30. This means that if the user keeps the **PTT** pressed for more than 30 seconds, the transmission will be temporarily disabled and he/she has to release the PTT to restore the normal conditions.

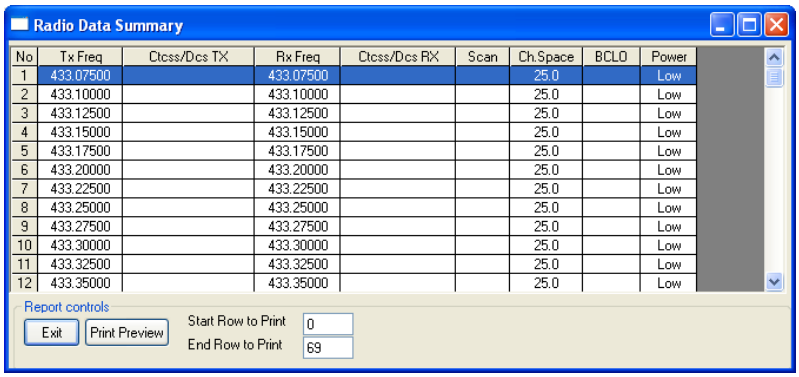
If you don't need to enable the TOT, just leave the **Tx Time Out Timer** drop down selector to **Off**.



6.10 Overviewing a Channel Data Summary

This smart feature allows you to overview a channel data summary which includes the channel parameters (e.g. Rx/Tx frequency, channel spacing, CTCSS/DCS and etc.). You may decide to print this report as record for future references and/or steadily leave it on the screen during the programming operations in order to avoid mistakes.

1) From the **General Settings** window click the **Channel Summary** button: the **Radio Data Summary** window will open and you will see the overview of the programmed channels.



2) You can decide to see the data in compact or in extended way. In this last case just expand the window as you do with the other software windows: go to the border, click on it with the mouse and extend the windows area in the direction you need by dragging it out. The shown picture shows a slightly extended summary window.
3) If you need to print the summary click the **Print Preview** button. You will see table with channel values for number of rows selected in **Radio Data Summary** window in **Start Row to Print** and **End Row to Print** fields. Programming software can print only one page at once and for print large table of channels you need to print page by page with different values in **Start Row to Print** and **End Row to Print** fields.
4) To escape the **Radio Data Summary** window click the **Exit** button.

7 DATA TRANSFER/MANAGEMENT

This section explains how to connect the transceiver to one of your computer's USB ports and how to provide one of these operations:

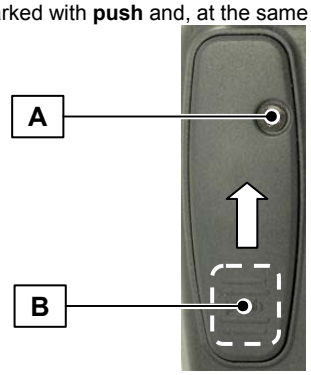
- Download programming data from the PC to the radio - i.e. programming the radio with the data you currently see on the software
- Upload programming data from the radio to the PC - i.e. reading the programming of the radio connected to the PC.
- Save the programming data in the PC – in order to create a programming library according to the customer's radio network.
- Opening a data set already stored in the PC – in order to program other radios of the same customer's radio network.

7.1 Connecting the radio to your PC

You will need to use the supplied USB cable (item **C** previously described in the par. 3.1).

1) Make sure that the transceiver is turned OFF.

2) Ensure that the end of the USB programming cable is connected to a free USB port available in your PC (if not, do than now).
3) Locate the plastic cover of the **SPK** and **MIC** connectors in the transceiver's left side
4) Using a proper screwdriver, unscrew the screw **[A]** which locks the cover in place and save it.
5) Slightly push the area **[B]** marked with **push** and, at the same time, raise the upper part of the cover in order to remove it. Save the cover.



6) Insert the other end of the supplied programming cable (the one provided with 2.5 mm stereo jack plug) the 2,5 mm **MIC** jack socket of the transceiver as per the over stated figure.
7) Push gently the cable's 2.5 mm stereo jack into the transceiver's **MIC** jack socket until it is firmly in place.

Be sure that the USB connector and the jack plug are well and firmly plugged into their sockets.

If you need to remove the connectors, pull them by grasping the connectors themselves (not the cable).

Don't forget to restore the position of the transceiver's cover and the fixing screw after the programming is completed. The SPK and MIC connectors should be always protected in the normal use of the transceiver.

Please see your computer's operating instructions if you need help. Particularly in locating the right USB port.

7.2 Program data to the radio (program)

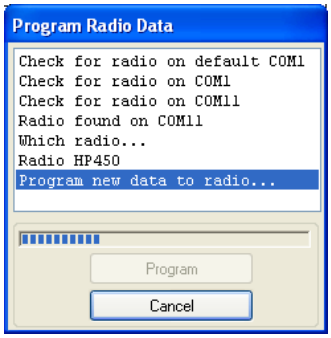
Once you are sure you have properly programmed all the radio's data (at least one channel with basic parameters), you can transfer the said data to its memory and terminate the programming.

Before program the data in a transceiver, it's recommended to check if they are properly set.

To transfer the programming data in a transceiver, do as follows:

1) Make sure the radio is switched off and properly connected (⚑ 7.1).

2) Keep the **MENU** and the ▲ buttons pressed.
3) Switch on the radio on by rotating the **ON-OFF/VOLUME** knob clockwise.
4) Release the **MENU** and the ▲ buttons. The radio should show PC. The status LED will glow amber steadily.
5) In the **Data** window of the software, press the **Program Radio** button. The **Program Radio Data** window will open
6) In the **Program Radio Data** window, press the **Program** button. The status LED will start flashing green and the software will show the progress of the programming with a blue bar meter extending toward the right.



7) At the end, if the data transfer will be successful, the radio will confirm it with a shot beep, the status LED will steady glow amber, and the display will show **PC-P**.
8) Switch the radio off, disconnect it from the PC and switch it on (in normal mode).
9) Check if the radio is properly programmed.
10) Now that you have successfully programmed the radio, you can download the data set to another transceiver in order to obtain a group of radios programmed in the same way. In this case restart from step 1.
11) Press **Cancel** button to exit from program mode

When you press Program button software automatically check for presence of radio in program mode. If radio not found on all available COM ports try to disconnecting the USB cable from the USB port of the PC and reconnect it. Check also the correct COM port as stated on par. 4.2.

If at step 6 the status LED is not flashing, it means that the data transfer doesn't work. Try by disconnecting the USB cable from the USB port of the PC and reconnect it. Check also the correct COM port as stated on par. 4.2.

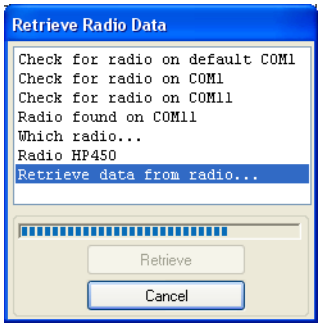
If the programming was not successful, check the cable connection and ensure that the radio was properly set in programming mode.

If the radio doesn't "behave" according to your programming, check the data set just downloaded in the radio.

7.3 Retrieving data from a radio

If an ALAN HP450 transceiver was already programming with the proper data set and you need to copy it one or more transceivers, or the said programming data set is very close to a new programming data you are going to set up, you can upload the data from the transceiver to your PC for further management.

1) Make sure the transceiver is switched OFF and the radio properly connected (⚐ 7.1).
2) Keep the **MENU** and ▲ buttons pressed.
3) Switch on the radio on by rotating the **ON-OFF/VOLUME** knob clockwise.
4) Release the **MENU** and the ▲ buttons. The radio should show PC. The status LED will glow amber steadily.
5) In the **Data** window of the software, press the **Retrieve Radio** button. The **Retrieve Radio Data** window will open



6) To retrieve the data from the radio, in the **Retrieve Radio Data** window, press the **Retrieve** button. The status LED will start flashing red and the software will show the progress of the programming with a blue bar meter extending toward the right.
7) At the end, if the data transfer will be successful, the radio will confirm it with a shot beep, the status LED will steady glow amber and in **Retrieve Radio Data** window message "*Radio data retrieved successfully*": will show.
8) Switch the radio off.

9) Press **Exit** button to exit from program mode.
10) If radio's data was successfully read when you press **Exit** button a **Save File as** window will show. In this case just follow the par. 7.4.c.
11) Now that you have successfully read the radio's data, you can:
    - ⇨ Edit the data (e.g. in order to slightly change the settings and program upload them in the transceiver) and program the data in the same transceiver (after the editing) in order to slightly change its settings. In this case leave the transceiver connected and perform the programming as described in par. 7.2.
    - ⇨ Program the data from the PC to another transceiver. In this case disconnect the programmer cable from the transceiver and connect another one in order to further download the data in it.
    - ⇨ Save the data in your PC as programming file(s). In this case just follow the par. 7.4.c.

When you press Program button software automatically check for presence of radio in retrieve mode. If radio not found on all available COM ports try to disconnecting the USB cable from the USB port of the PC and reconnect it. Check also the correct COM port as stated on par. 4.2.

If the retrieving was not successful, check the cable connection and ensure that the radio was properly set in programming mode or restart form the beginning. Try also by disconnecting the USB cable from the USB port of the PC and reconnect it and check the correct COM port as stated on par. 4.2.

After retrieve of the data in your software, it's recommended to check if the retrieved data set is the proper one to copy/edit.

7.4 Managing data files

If the data set you need is already stored in your PC, you can open (and eventually edit it) as described in this paragraph.

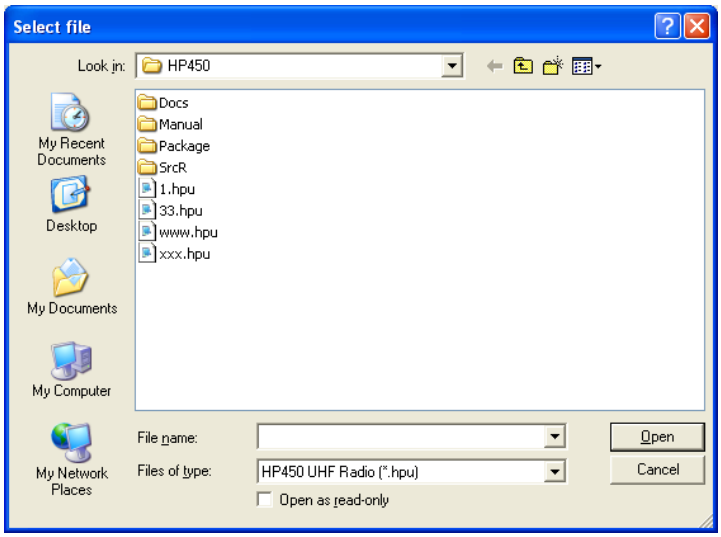
7.4.a File description

The programming software manages one kind of data files which could be stored in the PC:

- The **.hpu** file includes all the parameters contained in the **Channel and General Settings** window (e.g. the setup of each channel in terms of TX/RX frequency, CTCSS or DCS, channel enabled in the scan list, the setting of the various features, such as enabling/disabling menus, scan mode, TX output power, etc.)

7.4.b Opening data file(s) stored in the PC

1) Click the **OpenFile** icon or *Open* from *File Menu*, **Select File** window will appear.



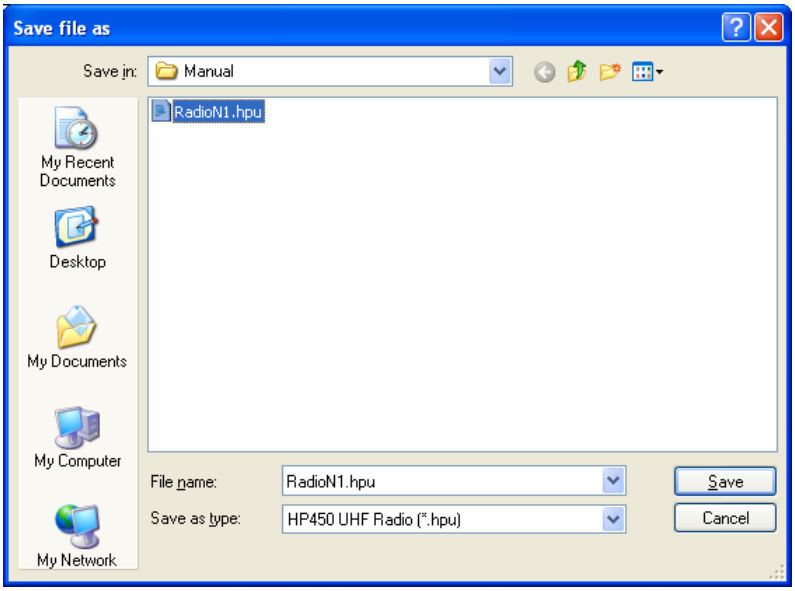
2) In the pane, click one of the **.hpu** file names stored in your PC (it will appear on the **File Name** field), then press the **Open** button. The **Select file** window will close and the **Channel settings** and **General settings** windows will be set according to the data stored in the file.
3) At this point you can:
    - Start editing the data. In this case go directly to Chap. 6, or
    - Transfer the data to the radio. In this case connect the radio to be programmed (as stated on par. 7.1) and transfer the data to the radio (as stated on par. 7.2).

The programming software can manage only one data set a time. Before opening a new data file, don't forget to save the current one, otherwise you'll loose all the currently programmed data. Always be sure to have saved the currently opened file.

7.4.c Saving data files to the PC

Before creating a new data set, or before editing an existing data set sourced from the PC or from a radio, It's recommended to save a new data set (files) in the PC. This will avoid to edit again all the data in case of software/PC failure. Moreover, this will also allow you to create your own data set library containing the frequencies/channels/settings of all your customers. Follow these steps:

1) Click the **Save** icon or *Save as* form file menu. The **Save File As** window will appear.
2) Type the file name in the **File Name** field (usually the customer name, e.g. **Ambulances**), then click the **Save** button.



3) **Save As file** window will disappear.
4) At this point you can:
   - Transfer the data to the radio. In this case connect the radio to be programmed as stated on par. 7.1 and transfer the data to the radio as stated on par. 7.2.
   - Keep on editing the data
   - Open a new data file

7.5 Exit the programmer Software

To close the programmer software, press the *Exit* from *File Menu* or press button in the **HP450 2A** window. The programmer software will close

8 ADDITIONAL INFORMATION

8.1 Reference number - frequencies of CTCSS tones

No	Freq.(Hz)	No	Freq.(Hz)	No	Freq.(Hz)
01	67.0	14	107.2	27	167.9
02	71.9	15	110.9	28	173.8
03	74.4	16	114.8	29	179.9
04	77.0	17	118.8	30	186.2
05	79.7	18	123.0	31	192.8
06	82.5	19	127.3	32	203.5
07	85.4	20	131.8	33	210.7
08	88.5	21	136.5	34	218.1
09	91.5	22	141.3	35	225.7
10	94.8	23	146.2	36	233.6
11	97.4	24	151.4	37	241.8
12	100.0	25	156.7	38	250.3
13	103.5	26	162.2		

8.2 Reference number – DCS codes

IMPORTANT! When you set the DCS codes with the radio's keypad, they appear on the radio's LCD (in the DCS setting menu) with the reference numbers (No) from 1 to 83 as shown in this table:

No	Cod. DCS	No	Cod. DCS	No	Cod. DCS	No	cod. DCS
01	023	23	152	45	343	67	606
02	025	24	155	46	346	68	612
03	026	25	156	47	351	69	624
04	031	26	162	48	364	70	627
05	032	27	165	49	365	71	631
06	043	28	172	50	371	72	632
07	047	29	174	51	411	73	654
08	051	30	205	52	412	74	662
09	054	31	223	53	413	75	664
10	065	32	226	54	423	76	703
11	071	33	243	55	431	77	712
12	072	34	244	56	432	78	723
13	073	35	245	57	445	79	731
14	074	36	251	58	464	80	732
15	114	37	261	59	465	81	734
16	115	38	263	60	466	82	743
17	116	39	265	61	503	83	754
18	125	40	271	62	506		
19	131	41	306	63	516		
20	132	42	311	64	532		
21	134	43	315	65	546		
22	143	44	331	66	565		

Anyway these reference numbers don't match with the ones of the software. In fact, when you set the reference numbers by software they are stated in the selector just after the last CTCSS code (38), so the first DCS code (023) starts with the reference number 39 (not 01).

For this reason, if you have read a DCS reference number in the radio's display and you need to set the same DCS code via the software, you have to add 38 to obtain the software's reference number. For example, if you have read the reference number 12 in the radio's display (equivalent to the DCS code 072), in the software you have to set the reference number 38+12 = 50.

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